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Leite

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(54) **CARTON AND CARTON BLANK**

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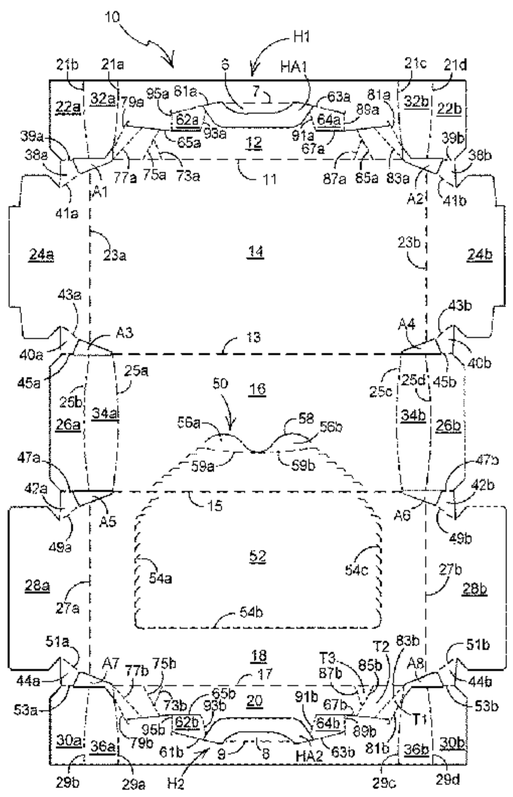
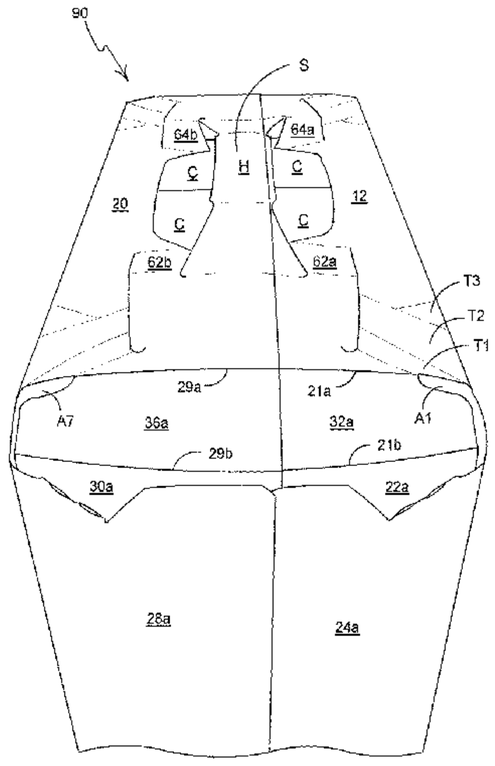
(57) **ABSTRACT**

A handle structure (H) for a carton having a handle panel (**12**, **20**) includes a strap member integrally conjoined with the handle panel and extending substantially between the opposing end edges (**21***a*, **21***c*, **29***a*, **29***c*) of the handle panel. The strap member has opposing strap edges substantially disjoined from the handle panel and includes a substantially centrally disposed grip region (HI, H**2**). A severance line segment (**65***a*, **67***a*) is disposed proximate each corner of the handle panel and extends from a first end point proximate that corner to a second end point proximate the grip region such that when force (F) normal to the plane of the handle panel is exerted upon the grip region, the strap member is flexed substantially outwardly of the plane to a biased position above the plane. The handle structure further includes a pair of first and second fold lines (**79***a*, **77***a*) extending from each severance line segment and converging towards the adjacent corner of the handle panel.

18 Claims, 6 Drawing Sheets





(51) **Int. Cl.**
B65D 5/42 (2006.01)
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USPC 206/427; 229/117.12, 117.13, 117.14
See application file for complete search history.

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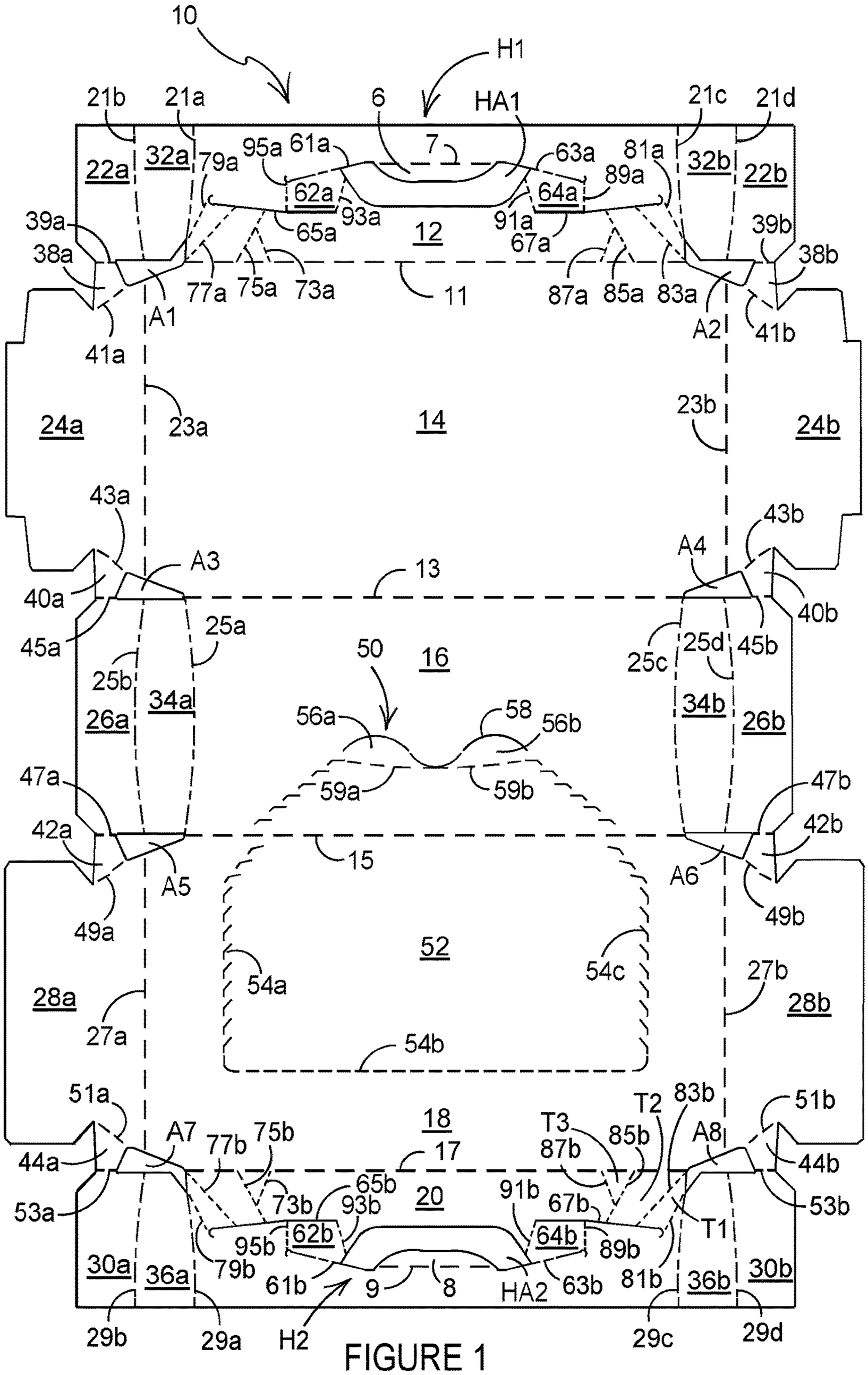
10
H1
21b
21a
6
HA1
21c
21d
22a
32a
79a
95a
61a
7
63a
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32b
22b
89a
62a
64a
39a
93a
91a
39b
65a
12
67a
38a
38b
77a
75a
73a
11
87a
85a
83a
A1
A2
41a
41b
24a
23a
14
23b
24b
43a
43b
A4
A3
13
40a
40b
45a
25a
25c
25d
45b
50
16
25b
34a
34b
56a
58
56b
26a
26b
47a
47b
59a
59b
42a
42b
15
A5
A6
49a
49b
52
54a
54c
27b
28a
28b
27a
54b
51a
51b
T2
83b
18
T3
A7
77b
75b
A8
87b
85b
17
44a
44b
65b
91b
53a
73b
93b
20
67b
53b
T1
62b
64b
95b
89b
30a
36a
79b
61b
9
8
HA2
63b
81b
36b
30b
29b
29a
H2
29c
29d

FIGURE 1

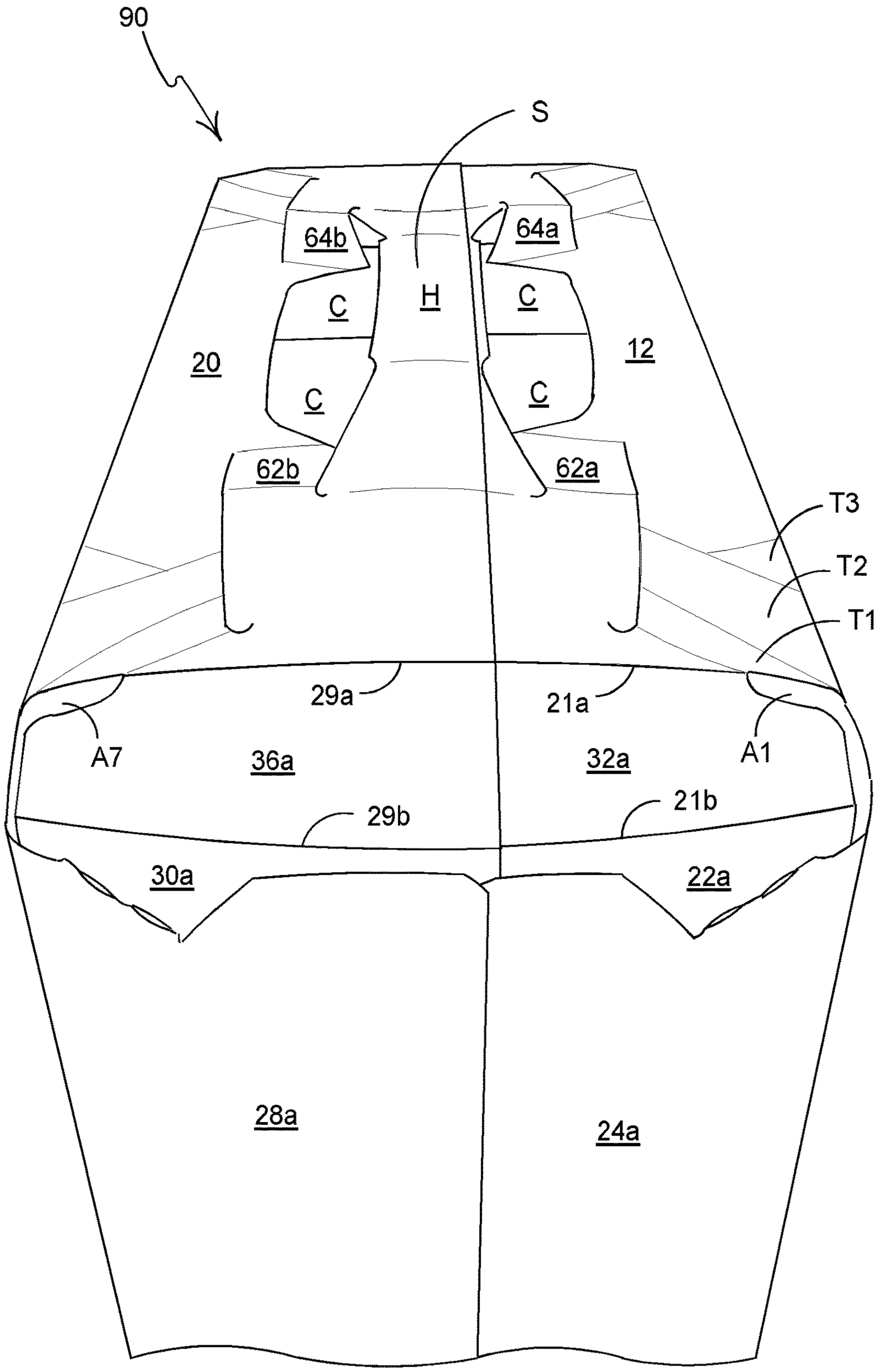
90
S
64b
64a
C
H
C
20
12
C
C
62b
62a
T3
T2
T1
29a
21a
A7
36a
32a
A1
29b
21b
30a
22a
28a
24a

FIGURE 2

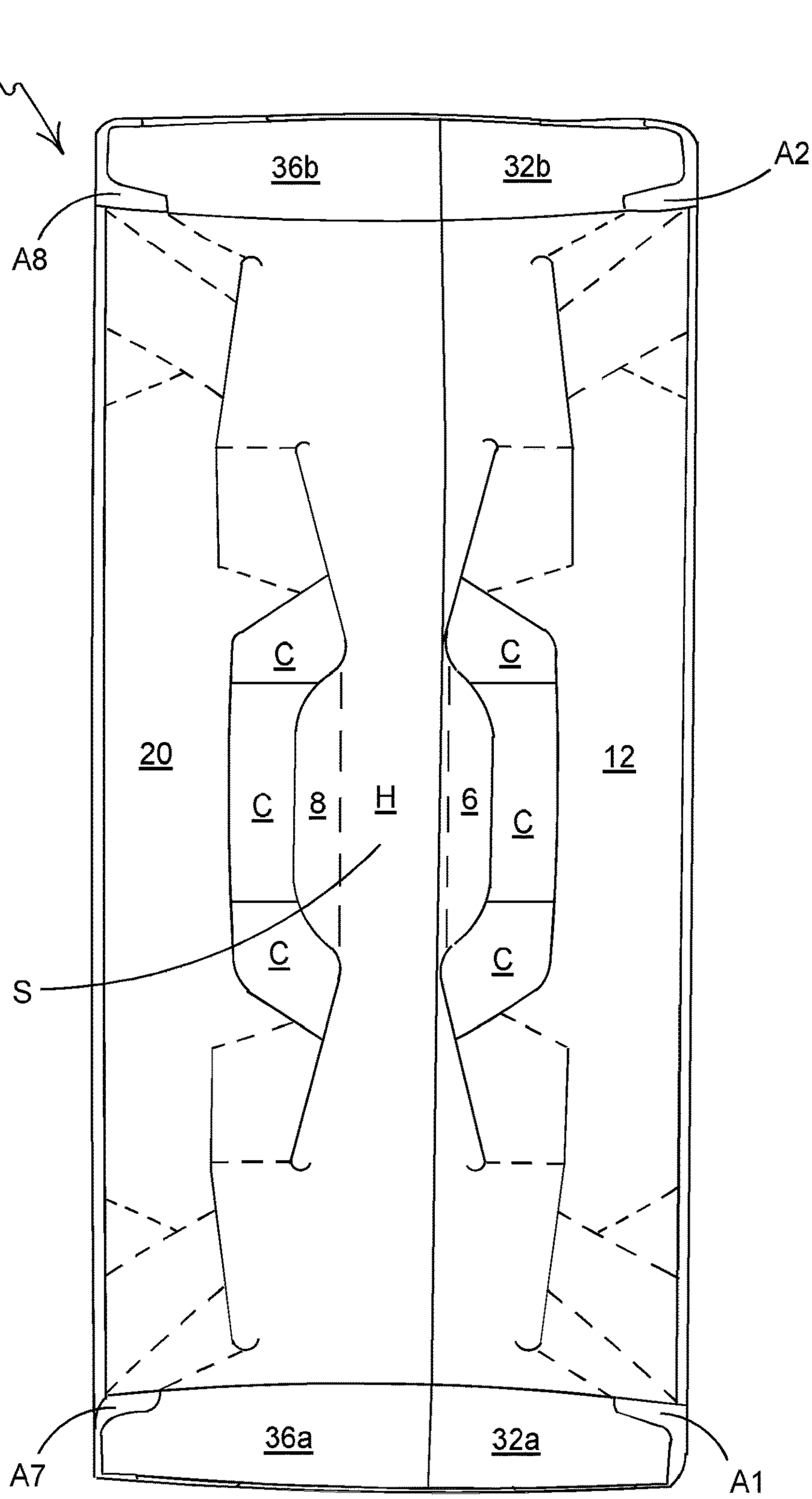

FIGURE 3

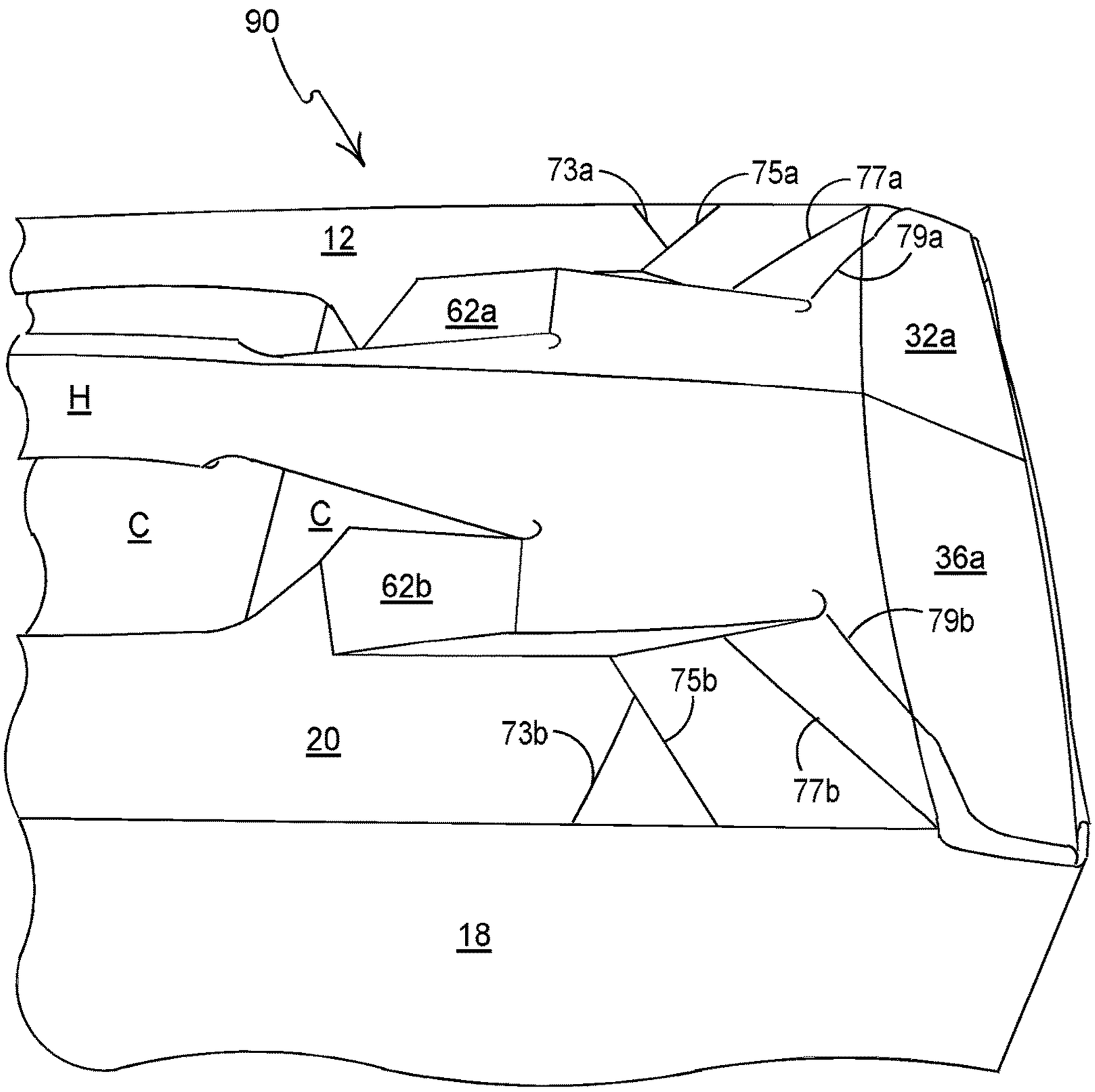

FIGURE 4

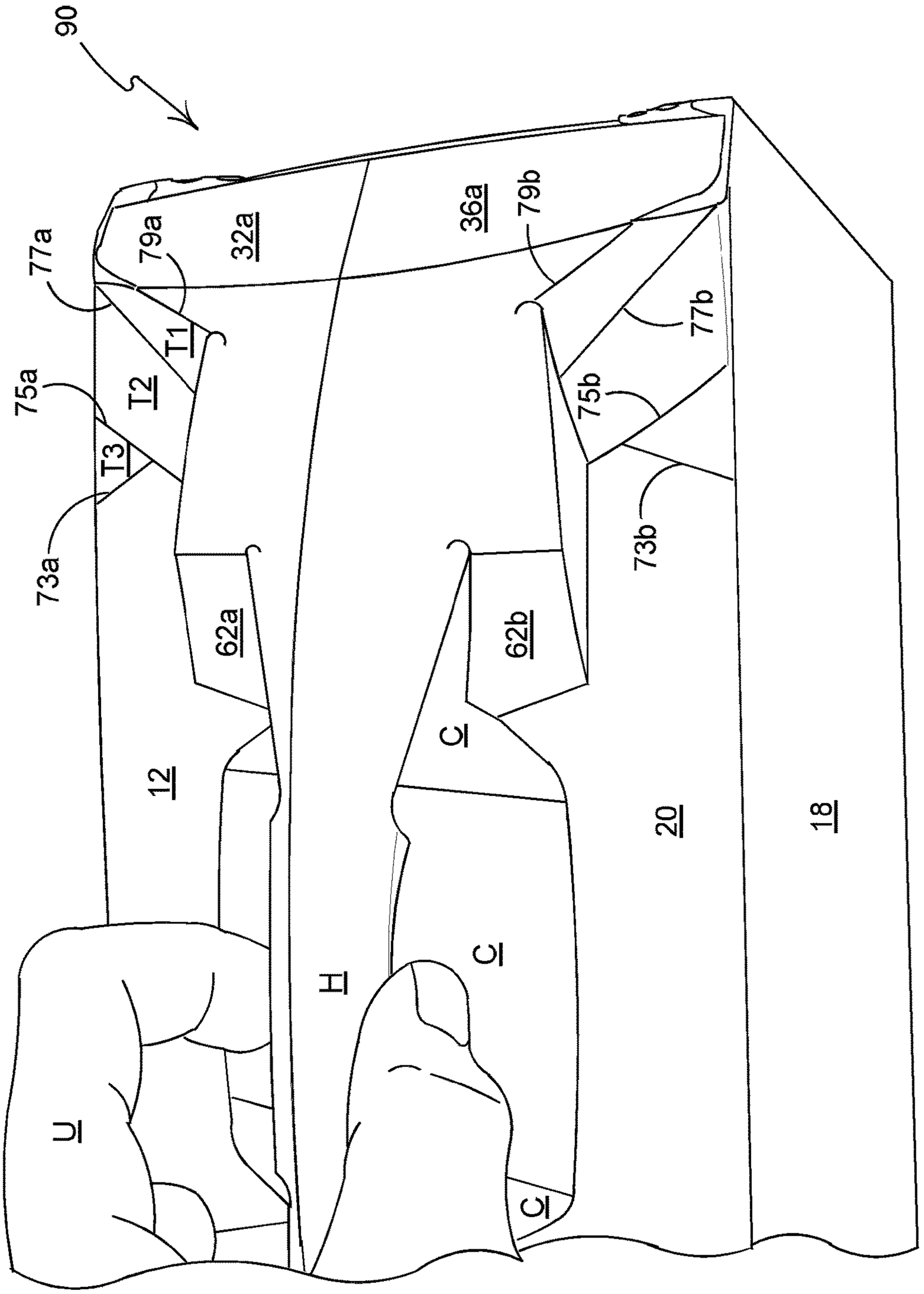
90
77a
79a
32a
36a
79b
77b
T1
T2
T3
75a
75b
73a
73b
62a
62b
C
12
20
18
D1
H
O1
O

FIGURE 5

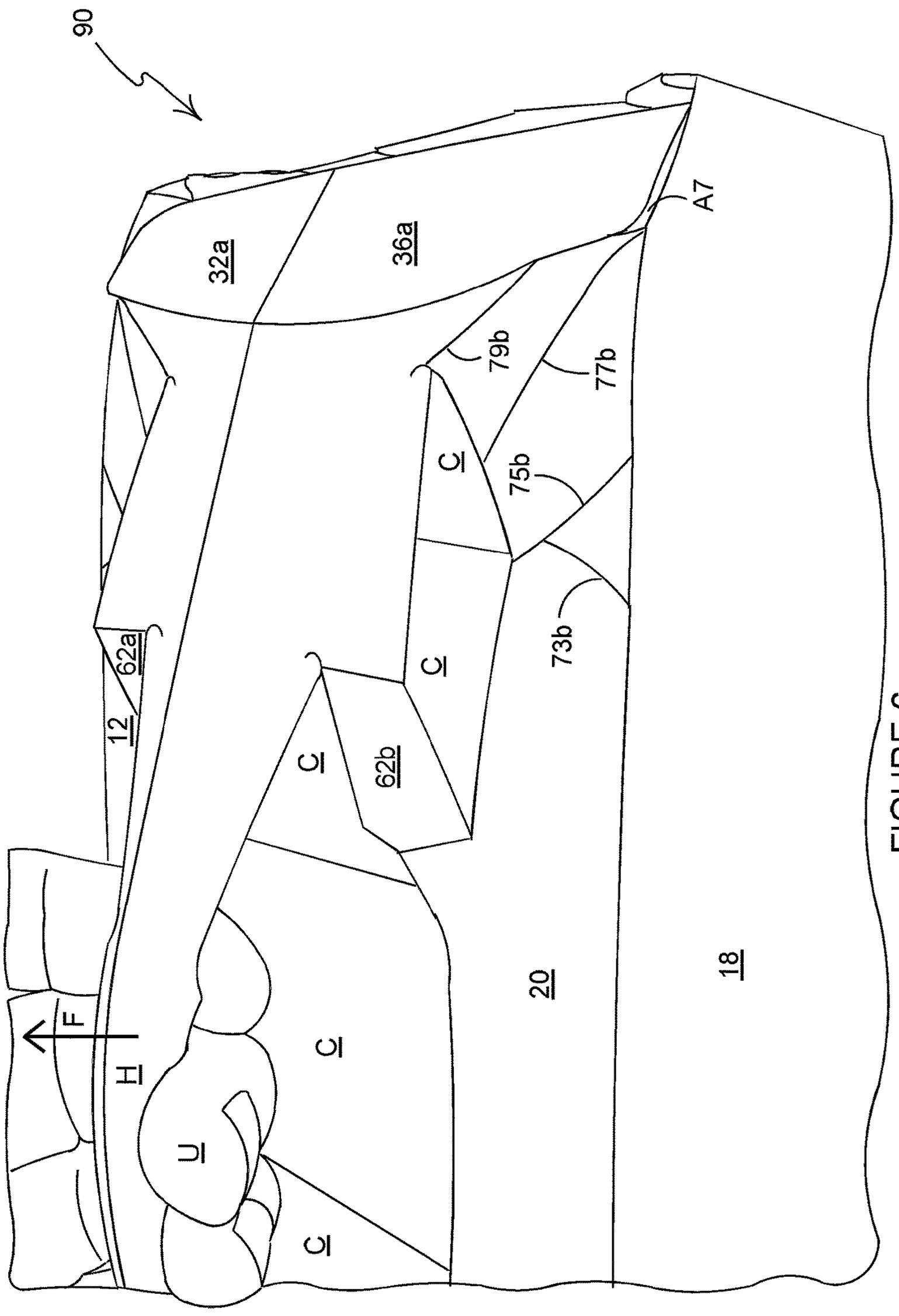

FIGURE 6

CARTON AND CARTON BLANK

TECHNICAL FIELD

The present invention relates to a carton and to a blank for forming the carton more specifically, but not exclusively, to a carton having a handle structure for carrying the carton.

BACKGROUND

In the field of packaging it is often required to provide consumers with a package comprising multiple primary product containers. Such multi-packs are desirable for shipping and distribution and for display of promotional information. For cost and environmental considerations, such cartons or carriers need to be formed from as little material as possible and cause as little wastage in the materials from which they are formed as possible. Another consideration is the strength of the packaging and its suitability for holding and transporting large weights of articles.

It is desirable to provide a carton with a carrying handle which is robust and readily accessed.

The present invention seeks to overcome or at least mitigate the problems of the prior art.

SUMMARY

According to a first aspect of the present invention, there is provided a carton including a handle panel and a first corner panel. The handle panel has first and second opposing end edges and opposing side edges which intersect each other to form corners of the handle panel. The first corner panel is hinged to the handle panel at the first end edge. The handle panel includes a handle structure for carrying the carton. The handle structure includes a strap member integrally conjoined with the handle panel and extending substantially between the end edges of the handle panel. The strap member has opposing strap edges substantially disjoined from the handle panel. The strap member includes a substantially centrally disposed grip region. The handle structure further includes a severance line segment disposed proximate each corner of the handle panel and extending from a first end point proximate that corner to a second end point proximate the grip region of the strap member. The carton further include a first cutaway separating the first corner panel from a first one of the corners of the handle panel, and a second cutaway separating the first corner panel from a second one of the corners of the handle panel, such that when a force substantially normal to a plane of the handle panel is exerted upon the grip region, the first and second cutaways facilitate displacement of the first corner panel towards the first end edge of the handle panel whereby the strap member is encouraged to flex substantially outwardly of the plane to a biased position above the plane.

Optionally, the carton may further includes a second corner panel hinged to the handle panel at the second end edge, a third cutaway separating the second corner panel from a third one of the corners of the handle panel, and a fourth cutaway separating the second corner panel from a fourth one of the corners of the handle panel, such that when a force substantially normal to the plane of the handle panel is exerted upon the grip region, the third and fourth cutaways facilitate displacement of the second corner panel towards the second end edge of the handle panel whereby the strap member is encouraged to flex substantially outwardly of the plane to said biased position.

Optionally, the grip region may be defined at least in part by respective segments of the opposing strap edges of the strap member, the respective segments being substantially parallel to the opposing side edges of the handle panel.

Optionally, the handle structure may further include a pair of first and second fold lines extending from each severance line segment and converging towards the adjacent corner of the handle panel.

Optionally, the carton may further comprise a first trapezoidal portion disposed adjacent to each corner of the handle panel. Each first trapezoidal portion may be defined in part by the respective pair of first and second fold lines.

Optionally, each first trapezoidal portion may be defined in part by the respective one of the first, second, third and fourth cutaways.

Optionally, an end edge of each first trapezoidal portions is defined by the respective one of the first, second, third and fourth cutaways.

Optionally, the carton may further include a second trapezoidal portion disposed between each severance line segment and the adjacent side edge of the handle panel. Each second trapezoidal portion may be disposed adjacent to the respective first trapezoidal portion and may be defined in part by a third fold line and the second fold line of the respective the first trapezoidal portion. The third and second fold lines of each second portion may extend divergently towards the adjacent side edge of the handle panel.

Optionally, the carton may further include a triangular portion disposed adjacent to each second trapezoidal portion. Each triangular portion may be defined in part by a fourth fold line and the third fold line of the respective second trapezoidal portion. The third and fourth fold lines of each triangular portion may extend divergently toward the adjacent side edge of the handle panel. The fourth fold line of each triangular portion may terminate on the third fold line of that triangular portion.

According to a second aspect of the present invention, there is provided a blank for forming a carton. The blank includes a plurality of panels for forming walls of the carton. The blank further includes a handle panel and a first corner panel. The handle panel forms one of the walls of the carton. The handle panel has first and second opposing end edges and opposing side edges that intersect to form corners of the handle panel. The first corner panel is hinged to the handle panel at the first end edge. The handle panel includes a handle structure for carrying the carton in a set up condition. The handle structure includes a strap member integrally conjoined with the handle panel and extending substantially between the end edges. The strap member has opposing strap edges substantially disjoined from the handle panel. The strap member includes a substantially centrally disposed grip region. The handle structure further includes a severance line segment disposed proximate each corner of the handle panel and extending from a first end point proximate the respective corner to a second end point proximate the grip region of the strap member. The blank further includes a first cutaway separating the first corner panel from a first one of the corners of the handle panel; and a second cutaway separating the first corner panel from a second one of the corners of the handle panel, such that in a set up carton when a force is exerted upon the grip region substantially normally to a plane of the handle panels, the first and second cutaways facilitate displacement of the first corner panel towards the first end edge of the handle panel to encourage the strap member to flex substantially outwardly of the plane to a biased position above the plane.

Optionally, the blank may further include a second corner panel hinged to the handle panel at the second end edge, a third cutaway separating the second corner panel from a third one of the corners of the handle panel, and a fourth cutaway separating the second corner panel from a fourth one of the corners of the handle panel, such that in a set up condition when a force substantially normal to the plane of the handle panel is exerted upon the grip region, the third and fourth cutaways facilitate displacement of the second corner panel towards the second end edge of the handle panel whereby the strap member is encouraged to flex substantially outwardly of the plane.

Optionally, each of the first, second, third and fourth cutaways is formed by an aperture.

Optionally, each aperture is defined in part by the handle panel, the respective corner panel, a side panel hinged to the handle panel, a minor end closure panel hinged to the corner panel and a web panel coupling the minor end closure panel to a major end closure panel hinged to the side panel.

According to a third aspect of the present invention, there is provided a handle structure for a carton. The carton has a handle panel with opposing side edges and opposing end edges that intersect to form corners of the handle panel. The handle structure includes a strap member integrally conjoined with the handle panel and extending substantially between the end edges. The strap member has opposing strap edges substantially disjoined from the handle panel. The strap member includes a substantially centrally disposed grip region, and a severance line segment disposed proximate each corner of the handle panel and extending from a first end point proximate that corner to a second end point proximate the grip region of the strap member, such that when a force substantially normal to a plane of the handle panel is exerted upon the grip region, the strap member is flexed substantially outwardly of the plane to a biased position above the plane. The handle structure further includes a pair of first and second fold lines extending from each severance line segment and converging toward the adjacent corner of the handle panel.

Optionally, the grip region may be defined at least in part by respective segments of the opposing strap edges of the strap member, the respective segments being substantially parallel to the opposing side edges of the handle panel.

Optionally, the handle structure may further include a first trapezoidal portion disposed adjacent to each corner of the handle panel. Each first trapezoidal portion may be defined in part by the respective pair of first and second fold lines.

Optionally, the first fold line of each pair of first and second fold lines may extend from the outer end of the respective severance line segment to a point on the adjacent end edge of the handle panel laterally inset from the adjacent side edge of the handle panel.

Optionally, the second fold line of each pair of first and second fold lines may extend from the adjacent corner of the handle panel to a location on the adjacent severance line segment inset from the outer end of the adjacent severance line segment.

Optionally, the handle structure may further include a second trapezoidal portion disposed between each severance line segments and the adjacent side edge of the handle panel. Each second trapezoidal portion may be disposed adjacent to the respective first trapezoidal portion and may be defined in part by a third fold line and the second fold line of the respective first trapezoidal portion. The third and second fold lines of each second portion may extend divergently towards the adjacent side edge of the handle panel.

Optionally, the handle structure may further comprise a triangular portion disposed adjacent to each second trapezoidal portion. Each triangular portion may be defined in part by a fourth fold line and the third fold line of the respective second trapezoidal portion. The third and fourth fold lines of each triangular portion may extend divergently towards the adjacent side edge of the handle panel. The fourth fold line of each triangular portion may terminate on the third fold line of that triangular portion.

Within the scope of this application it is envisaged and intended that the various aspects, embodiments, examples, features and alternatives set out in the preceding paragraphs, in the claims and/or in the following description and drawings may be taken independently or in any combination thereof. For example, features described in connection with one embodiment are applicable to all embodiments unless there is incompatibility of features.

BRIEF DESCRIPTION OF THE DRAWINGS

Exemplary embodiments of the invention will now be described with reference to the accompanying drawings, in which:

FIG. **1** is a plan view from above of a blank for forming a carton according to a first embodiment;

FIG. **2** is a perspective view from above of a carton formed from the blank of FIG. **1**;

FIG. **3** is a plan view from above of the carton formed from the blank of FIG. **1**;

FIG. **4** is perspective view of an end of a carton formed from the blank of FIG. **1**; and

FIGS. **5** and **6** are perspective views of an end of a carton formed from the blank of FIG. **1** showing a carrying handle in use.

DETAILED DESCRIPTION OF EMBODIMENTS

Detailed descriptions of specific embodiments of the package, blanks and cartons are disclosed herein. It will be understood that the disclosed embodiments are merely examples of the way in which certain aspects of the invention can be implemented and do not represent an exhaustive list of all of the ways the invention may be embodied. As used herein, the word "exemplary" is used expansively to refer to embodiments that serve as illustrations, specimens, models, or patterns. Indeed, it will be understood that the packages, blanks and cartons described herein may be embodied in various and alternative forms. The Figures are not necessarily to scale and some features may be exaggerated or minimised to show details of particular components. Well-known components, materials or methods are not necessarily described in great detail in order to avoid obscuring the present disclosure. Any specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the invention.

FIG. **1** shows a plan view of a first blank **10** capable of forming a carton **90**, as shown in FIGS. **2** to **6**, for primary products such as, but not limited to, cans, hereinafter referred to as articles C. FIGS. **2** to **6** illustrate a carton **90** having a handle structure in accordance with a preferred embodiment of the invention.

In the embodiments detailed herein, the terms "carton" and "carrier" refer, for the non-limiting purpose of illustrating the various features of the invention, to a container for engaging, carrying, and/or dispensing articles, such as prod-

uct containers. It is contemplated that the teachings of the invention can be applied to various product containers, which may or may not be tapered and/or cylindrical. Exemplary containers include bottles (for example metallic, glass or plastics bottles), cans (for example aluminium cans), tins, pouches, packets and the like.

The blanks are formed from a sheet of suitable substrate. It is to be understood that, as used herein, the term "suitable substrate" includes all manner of foldable sheet material such as paperboard, corrugated board, cardboard, plastic, combinations thereof, and the like. It should be recognized that one or other numbers of blanks may be employed, where suitable, for example, to provide the carrier structure described in more detail below.

In the exemplary embodiment, the blanks are configured to form a carton or carrier for packaging an exemplary arrangement of exemplary articles. In a first illustrated exemplary embodiment, the arrangement is a 3×5 matrix or array and the articles are cans. The blank can be alternatively configured to form a carrier for packaging other types, number and size of article and/or for packaging articles in a different arrangement or configuration.

FIGS. **2** and **3** illustrate the transverse alignment of cans C with respect to the handle structure H of the carton **90** in accordance with a preferred embodiment of the invention. FIGS. **5** and **6** depict the manner in which the top wall of the carton **90**, including its handle structure, bows upwardly when a force F is applied to lift a strap member S by a user U.

The blank **10** comprises a plurality of main panels **12**, **14**, **16**, **18**, **20** hinged one to the next in a linear series. The first blank **10** comprises a first top panel **12** hinged to a first side panel **14** by a fold line **11**. The first side panel **14** is hinged to a base panel **16** by a fold line **13**. The base panel **16** is hinged to a second side panel **18** by a fold line **15**. The second panel **18** is hinged to a second top panel **20** by a fold line **17**.

The plurality of main panels **12**, **14**, **16**, **18**, **20** of the first blank **10** forms an open ended tubular structure when in a set up condition.

Each of the ends of the tubular structure is at least partially closed by end closure panels. In the illustrated embodiment the ends of the tubular structure are fully closed by end closure panels **22***a*, **24***a*, **26***a*, **28***a*, **30***a*, **22***b*, **24***b*, **26***b*, **28***b*, **30***b*.

End closure panels **22***a*, **24***a*, **26***a*, **28***a*, **30***a* are configured to close a first end of the tubular structure and end panels **22***b*, **24***b*, **26***b*, **28***b*, **30***b* are configured to close a second end of the tubular structure.

A first end closure panel **22***a* is hinged to a first end of the first top panel **12** by a pair of fold lines **21***a*, **21***b*. A second end closure panel **24***a* is hinged to a first end of the first side panel **14** by a fold line **23***a*. A third end closure panel **26***a* is hinged to a first end of base panel **16** by a pair of fold lines **25***a*, **25***b*. A fourth end closure panel **28***a* is hinged to a first end of the second side panel **18** by a fold line **27***a*. A fifth end closure panel **30***a* is hinged to a first end of second top panel **20** by a pair of fold lines **29***a*, **29***b*.

The pair of fold lines **21***a*, **21***b* define a first corner panel or bevel panel **32***a* disposed between the first top panel **12** and the first end closure panel **22***a*.

The pair of fold lines **29***a*, **29***b* define a second corner panel or bevel panel **36***a* disposed between the second top panel **20** and the fifth end closure panel **30***a*. Together the first corner panel **32***a* and the second corner panel **36***a* form a composite corner panel **32***a*/**36***a* at a first upper end of the carton **90**.

The pair of fold lines **25***a*, **25***b* define a third corner panel **34***a* disposed between the base panel **16** and the third end closure panel **26***a*.

A sixth end closure panel **22***b* is hinged to a second end of the first top panel **12** by a pair of fold lines **21***c*, **21***d*. A seventh end closure panel **24***b* is hinged to a second end of first side panel **14** by a fold line **23***b*. An eighth end closure panel **26***b* is hinged to a second end of base panel **16** by a pair of fold lines **25***c*, **25***d*. A ninth end closure panel **28***b* is hinged to a second end of second side panel **18** by a fold line **27***b*. A tenth end closure panel **30***b* is hinged to a second end of second top panel **20** by a pair of fold lines **29***c*, **29***d*.

The pair of fold lines **21***c*, **21***d* define a fourth corner panel **32***b* disposed between the first top panel **12** and the sixth end closure panel **22***b*.

The pair of fold lines **29***c*, **29***d* define a fifth corner panel **36***b* disposed between the second top panel **20** and the tenth end closure panel **30***b*. Together the fourth corner panel **32***b* and the fifth corner panel **36***b* form a composite corner panel **32***b*/**36***b* at a second upper end of the carton **90**.

The pair of fold lines **25***c*, **25***d* define a sixth corner panel **34***b* disposed between the base panel **16** and the eighth end closure panel **26***b*.

The first end closure panel **22***a* and the fifth end closure panel **30***a* together form a minor side end closure panel. The third end closure panel **26***a* forms a minor side end closure panel. The sixth end closure panel **22***b* and the tenth end closure panel **30***b* together form a minor side end closure panel. The eighth end closure panel **26***b* forms a minor side end closure panel.

The second end closure panel **24***a* and the fourth end closure panel **28***a* each form a major upper end closure panel. The seventh end closure panel **24***b* and the ninth end closure panel **28***b* each form a major lower end closure panel.

A first web panel **38***a* couples the first end closure panel **22***a* to the second end closure panel **24***a*. The first web panel **38***a* is hinged to the first end closure panel **22***a* by a fold line **39***a*. The first web panel **38***a* is hinged to the second end closure panel **24***a* by a fold line **41***a*.

A second web panel **40***a* couples the second end closure panel **24***a* to the third end closure panel **26***a*. The second web panel **40***a* is hinged to the second end closure panel **24***a* by a fold line **43***a*. The second web panel **40***a* is hinged to the third end closure panel **26***a* by a fold line **45***a*.

A third web panel **42***a* couples the third end closure panel **26***a* to the fourth end closure panel **28***a*. The third web panel **42***a* is hinged to the third end closure panel **26***a* by a fold line **47***a*. The third web panel **42***a* is hinged to the fourth end closure panel **28***a* by a fold line **49***a*.

A fourth web panel **44***a* couples the fourth end closure panel **28***a* to the fifth end closure panel **30***a*. The fourth web panel **44***a* is hinged to the fourth end closure panel **28***a* by a fold line **51***a*. The fourth web panel **44***a* is hinged to the fifth end closure panel **30***a* by a fold line **53***a*.

A fifth web panel **38***b* couples the sixth end closure panel **22***b* to the seventh end closure panel **24***b*. The fifth web panel **38***b* is hinged to the sixth end closure panel **22***b* by a fold line **39***b*. The fifth web panel **38***b* is hinged to the seventh end closure panel **24***b* by a fold line **41***b*.

A sixth web panel **40***b* couples the seventh end closure panel **24***b* to the eighth end closure panel **26***b*. The sixth web panel **40***b* is hinged to the seventh end closure panel **24***b* by a fold line **43***b*. The sixth web panel **40***b* is hinged to the eighth end closure panel **26***b* by a fold line **45***b*.

A seventh web panel **42***b* couples the eighth end closure panel **26***b* to the ninth end closure panel **28***b*. The seventh

web panel **42***b* is hinged to the eighth end closure panel **26***b* by a fold line **47***b*. The seventh web panel **42***b* is hinged to the ninth end closure panel **28***b* by a fold line **49***b*.

An eighth web panel **44***b* couples the ninth end closure panel **28***b* to the tenth end closure panel **30***b*. The eighth web panel **44***b* is hinged to the ninth end closure panel **28***b* by a fold line **51***b*. The eighth web panel **44***b* is hinged to the tenth end closure panel **30***b* by a fold line **53***b*.

The blank **10** comprises a first aperture A**1**, first aperture A**1** is defined in part by the first top panel **12**, the first side panel **14**, the first corner panel **32***a*, the first end closure panel **22***a*, the first web panel **38***a* and the second end closure panel **24***a*.

The blank **10** comprises a second aperture A**2**, second aperture A**2** is defined in part by the first top panel **12**, the first side panel **14**, the fourth corner panel **32***b*, the sixth end closure panel **22***b*, the fifth web panel **38***b* and the seventh end closure panel **24***b*.

The blank **10** comprises a third aperture A**3**, third aperture A**3** is defined in part by the base panel **16**, the first side panel **14**, the third corner panel **34***a*, the third end closure panel **26***a*, the second web panel **40***a* and the second end closure panel **24***a*.

The blank **10** comprises a fourth aperture A**4**, fourth aperture A**4** is defined in part by the base panel **16**, the first side panel **14**, the sixth corner panel **34***b*, the eighth end closure panel **26***b*, the sixth web panel **40***b* and the seventh end closure panel **24***b*.

The blank **10** comprises a fifth aperture A**5**, fifth aperture A**5** is defined in part by the base panel **16**, the second side panel **18**, the third corner panel **34***a*, the third end closure panel **26***a*, the third web panel **42***a* and the fourth end closure panel **28***a*.

The blank **10** comprises a sixth aperture A**6**, sixth aperture A**6** is defined in part by the base panel **16**, the second side panel **18**, the sixth corner panel **34***b*, the eighth end closure panel **26***b*, the seventh web panel **42***b* and the ninth end closure panel **28***b*.

The blank **10** comprises a seventh aperture A**7** seventh aperture A**7** is defined in part by the second top panel **20**, the second side panel **18**, the second corner panel **36***a*, the fifth end closure panel **30***a*, the fourth web panel **44***a* and the fourth end closure panel **28***a*.

The blank **10** comprises an eighth aperture A**8**, eighth aperture A**8** is defined in part by the second top panel **20**, the second side panel **18**, the fifth corner panel **36***b*, the tenth end closure panel **30***b*, the sixth web panel **44***b* and the ninth end closure panel **28***b*.

The blank **10** comprises a first handle structure HA**1** in the first top panel **12** and a second handle structure HA**2** in the second top panel **20**.

The blank **10** comprises an access device struck in part from the base panel **16** and in part from the second side panel **18**. The access device **50** comprises a gate panel **52**.

The gate panel **52** is defined by a first severance line **54***a*, a second severance line **54***b*, a third severance line **54***c* and a tear initiation device **50**.

In alternative embodiments the gate panel **52** is hinged to the carton **90**, for example by a hinge line, in replacement of a second severance line **54***b*.

The second severance line **54***b* is defined in the second side panel **18**.

The first severance line **54***a* extends from a first end of the second severance line **54***b* into the base panel **16** to a first end of the tear initiation device **50**. The third severance line **54***c* extends from a second end of the second severance line **54***b* into the base panel **16** to a second end of the tear initiation device **50**.

In this way, the first severance line **54***a*, the second severance line **54***b*, the third severance line **54***c* and the tear initiation device **50** form a continuous loop.

The tear initiation device **50** comprises pair of tabs **56***a*, **56***b* defined by a substantially "m" shaped severance line **58** and a pair of fold lines **59***a*, **59***b*. The "m" shaped severance line **58** extends between a second end of the first severance line **54***a* and a second end of the third severance line **54***c*. A first fold line **59***a* extends from a first end of the "m" shaped severance line **58** to the centre of the "m" shaped severance line **58**. A second fold line **59***b* extends from a second end of the "m" shaped severance line **58** to the centre of the "m" shaped severance line **58**. In this way two tabs **56***a*, **56***b* are formed which are hinged to the gate panel **52**.

In alternative embodiments the tabs **56***a*, **56***b* may be hinged to the base panel **16**.

The blank **10** comprises a handle structure; the handle structure is defined in part in the first top panel **12** and in part in the second top panel **20**.

The first top panel **12** and the second top panel **20** form the top wall, or panel, of the carton **90** that contains the handle structure.

The first top panel **12** comprises a first portion H**1** of the handle structure. The first portion H**1** comprises a strap member with a tapered region mediate each of the end regions. The strap member is defined at least in part by a first handle aperture HA**1** and a first severance line **61***a*, and a second severance line **63***a*. The handle structure comprises a cushioning flap **6** hinged to the strap member by a fold line **7**, the cushioning flap **6** being defined at least in part by the first handle aperture HA**1**.

At each end region of the strap handle member a web extends diagonally from the vertex of a side edge and an end edge of the first top panel **12**.

A first web, disposed at a first end of the strap member, comprises a plurality of fold lines **79***a*, **77***a*, **75***a*, **73***a* and a third severance line **65***a*. The third severance line **65***a* extends substantially longitudinally with respect to the first top panel **12**. The third severance line **65***a* is spaced apart from the first severance line **61***a*. The third severance line **65***a* is arranged in a partially overlapping relationship with the first severance line **61***a*.

A connecting member **62***a* is defined in the region of the overlap between the third severance line **65***a* and the first severance line **61***a*. The connecting member **62***a* conjoins the strap member and a portion of the region of the first top panel **12** adjacent the strap member. The connecting member **62***a* is defined in part by a fold line **93***a* and a fold line **95***a*. Fold line **95***a* extends between the third severance line **65***a* and the first severance line **61***a*. Fold line **93***a* extends between the third severance line **65***a* and the first handle aperture HA**1**.

The web comprises a first fold line **79***a*, first fold line **79***a* extends between an end of the third severance line **65***a* and a first end edge of the first top panel **12** defined by the fold line **21***a*. The first fold line **79***a* terminates at the first aperture A**1** at a point inset laterally from the side edge of the first top panel **12** defined by the fold line **11**.

The first web comprises a second fold line **77***a*, second fold line **77***a* extends between the third severance line **65***a* and a first corner of the first top panel **12** defined by the first end edge (fold line **21***a*) and the side edge (fold line **11**). The second fold line **77***a* terminates at the first aperture A**1** at a point on the side edge of the first top panel **12**.

The first fold line **79***a* and the second fold line **77***a* define in part a first trapezoidal portion of the first top panel **12**. The first fold line **79***a* and the second fold line **77***a* are arranged to be convergent towards the first corner of the top panel **12**.

The first web comprises a third fold line **75***a*, third fold line **75***a* extends between the third severance line **65***a* and a side edge of the first top panel **12** defined by the fold line **11** at a point inset longitudinally from the first corner of the top panel **12**.

The third fold line **75***a* and the second fold line **77***a* define in part a second trapezoidal portion of the first top panel **12**. The third fold line **75***a* and the second fold line **77***a* are arranged to be convergent towards the third severance line **65***a*.

The first web comprises a fourth fold line **73***a*, fourth fold line **73***a* extends between the third fold line **75***a* and a side edge of the first top panel **12** defined by the fold line **11** at a point inset longitudinally from the terminus of the third fold line **75***a* on the fold line **11**. The third fold line **75***a* and the fourth fold line **73***a* define in part a triangular portion of the first top panel **12**.

The first aperture A**1** is substantially "boot" shaped, the "toe" of the "boot" extending into the first corner panel **32***a*, and the "shaft" of the "boot" extending substantially longitudinally. The "heel" of the "boot" lies substantially on the fold line **11** defining the side edge of the first top panel **12**.

A second web, disposed at a second end of the strap member, comprises a plurality of fold lines **81***a*, **83***a*, **85***a*, **87***a* and a fourth severance line **67***a*. The fourth severance line **67***a* extends substantially longitudinally with respect to the first top panel **12**. The fourth severance line **67***a* is spaced apart from the second severance line **63***a*. The fourth severance line **67***a* is arranged in a partial overlapping relationship with the second severance line **63***a*.

A connecting member **64***a* is defined in the region of the overlap between the fourth severance line **67***a* and the second severance line **63***a*. The connecting member **64***a* conjoins the strap member and a portion of the region of the first top panel **12** adjacent the strap member. The connecting member **64***a* is defined in part by a fold line **89***a* and a fold line **91***a*. Fold line **89***a* extends between the fourth severance line **67***a* and the second severance line **63***a*. Fold line **91***a* extends between the fourth severance line **67***a* and the first handle aperture HA**1**.

The second web comprises a first fold line **81***a*, first fold line **81***a* extends between an end of the fourth severance line **67***a* and a second end edge of the first top panel **12** defined by the fold line **21***c*. The first fold line **81***a* terminates at the second aperture A**2** at point inset laterally from the side edge of the first top panel **12** defined by the fold line **11**.

The second web comprises a second fold line **83***a*, second fold line **83***a* extends between the fourth severance line **67***a* to a second corner of the first top panel **12** defined by the second end edge (fold line **21***c*) and the side edge (fold line **11**). The second fold line **83***a* terminates at the second aperture A**2** at point on the side edge of the first top panel **12**.

The first fold line **81***a* and the second fold line **83***a* define in part a first trapezoidal portion of the first top panel **12**. The first fold line **81***a* and the second fold line **83***a* are arranged to be convergent towards the second corner of the top panel **12**.

The second web comprises a third fold line **85***a*, third fold line **85***a* extends between the fourth severance line **67***a* and a side edge of the first top panel **12** defined by the fold line **11** at a point inset longitudinally from the second corner of the top panel **12**.

The third fold line **85***a* and the second fold line **83***a* define in part a second trapezoidal portion of the first top panel **12**. The third fold line **85***a* and the second fold line **83***a* are arranged to be convergent towards the fourth severance line **67***a*.

The second web comprises a fourth fold line **87***a*, fourth fold line **87***a* extends between the third fold line **85***a* and a side edge of the first top panel **12** defined by the fold line **11** at a point inset longitudinally from the terminus of the third fold line **85***a* on the fold line **11**. The third fold line **85***a* and the fourth fold line **87***a* define in part a triangular portion of the first top panel **12**.

The second aperture A**2** is substantially "boot" shaped, the "toe" of the "boot" extending into the fourth corner panel **32***b*, and the "shaft" of the "boot" extending substantially longitudinally. The "heel" of the "boot" lies substantially on the fold line **11** defining the side edge of the first top panel **12**.

The second top panel **20** comprises a second portion H**2** of the handle structure, the second portion H**2** comprises a strap member with a tapered region mediate each of the end regions. The strap member is defined at least in part by a second handle aperture HA**2** and a first severance line **61***b* and a second severance line **63***b*. The handle structure comprises a cushioning flap **8** hinged to the strap member by a fold line **9**, the cushioning flap **8** being defined at least in part by the second handle aperture HA**2**.

At each end region of the strap handle member a web extends diagonally from the vertex of a side edge and an end edge of the second top panel **20**.

A first web, disposed at a first end of the strap member, comprises a plurality of fold lines **79***b*, **77***b*, **75***b*, **73***b* and a third severance line **65***b*. The third severance line **65***b* extends substantially longitudinally with respect to the second top panel **20**. The third severance line **65***b* is spaced apart from the first severance line **61***b*. The third severance line **65***b* is arranged in a partial overlapping relationship with from the first severance line **61***b*.

A connecting member **62***b* is defined in the region of the overlap between the third severance line **65***b* and the first severance line **61***b*. The connecting member **62***b* conjoins the strap member and a portion of the region of the second top panel **20** adjacent the strap member. The connecting member **62***b* is defined in part by a fold line **93***b* and a fold line **95***b*. Fold line **95***b* extends between the third severance line **65***b* and the first severance line **61***b*. Fold line **93***b* extends between the third severance line **65***b* and the second handle aperture HA**2**.

The web comprises a first fold line **79***b*, first fold line **79***b* extends between an end of the third severance line **65***b* and a first end edge of the second top panel **20** defined by the fold line **29***a*. The first fold line **79***b* terminates at the seventh aperture A**7** at point inset laterally from the side edge of the second top panel **20** defined by the fold line **17**.

The first web comprises a second fold line **77***b*. Second fold line **77***b* extends between the third severance line **65***b* to a first corner of the second top panel **20** defined by the first end edge (fold line **29***a*) and the side edge (fold line **17**). The second fold line **77***b* terminates at the seventh aperture A**7** at point on the side edge of the second top panel **20**.

The first fold line **79***b* and the second fold line **77***b* define in part a first trapezoidal portion of the second top panel **20**. The first fold line **79***b* and the second fold line **77***b* are arranged to be convergent towards the first corner of the second top panel **20**.

The first web comprises a third fold line **75***b*, third fold line **75***b* extends between the third severance line **65***b* and a

side edge of the second top panel **20** defined by the fold line **17** at a point inset longitudinally from the first corner of the second top panel **20**.

The third fold line **75***b* and the second fold line **77***b* define in part a second trapezoidal portion of the second top panel **20**. The third fold line **75***b* and the second fold line **77***b* are arranged to be convergent towards the third severance line **65***b*.

The first web comprises a fourth fold line **73***b*, fourth fold line **73***b* extends between the third fold line **75***b* and a side edge of the second top panel **20** defined by the fold line **17** at a point inset longitudinally from the terminus of the third fold line **75***b* on the fold line **17**. The third fold line **75***b* and the fourth fold line **73***b* define in part a triangular portion of the second top panel **20**.

The seventh aperture A**7** is substantially "boot" shaped, the "toe" of the "boot" extending into the second corner panel **36***a*, and the "shaft" of the "boot" extending substantially longitudinally. The "heel" of the "boot" lies substantially on the fold line **17** defining the side edge of the second top panel **20**.

A second web, disposed at a second end of the strap member, comprises a plurality of fold lines **81***b*, **83***b*, **85***b*, **87***b* and a fourth severance line **67***b*. The fourth severance line **67***b* extends substantially longitudinally with respect to the second top panel **20**. The fourth severance line **67***b* is spaced apart from the second severance line **63***b*. The fourth severance line **67***b* is arranged in a partial overlapping relationship with from the second severance line **63***b*.

A connecting member **64***b* is defined in the region of the overlap between the fourth severance line **67***b* and the second severance line **63***b*. The connecting member **64***b* conjoins the strap member and a portion of the region of the second top panel **20** adjacent the strap member. The connecting member **64***b* is defined in part by a fold line **89***b* and a fold line **91***b*. Fold line **89***b* extends between the fourth severance line **67***b* and the second severance line **63***b*. Fold line **91***b* extends between the fourth severance line **67***b* and the second handle aperture HA**2**.

The second web comprises a first fold line **81***b*, first fold line **81***b* extends between an end of the fourth severance line **67***b* and a second end edge of the second top panel **20** defined by the fold line **29***c*. The first fold line **81***b* terminates at the eighth aperture A**8** at point inset laterally from the side edge of the second top panel **20** defined by the fold line **17**.

The second web comprises a second fold line **83***b*, second fold line **83***b* extends between the fourth severance line **67***b* to a second corner of the second top panel **20** defined by the second end edge (fold line **29***c*) and the side edge (fold line **17**). The second fold line **83***b* terminates at the eighth aperture A**8** at point on the side edge of the second top panel **20**.

The first fold line **81***b* and the second fold line **83***b* define in part a first trapezoidal portion T**1** of the second top panel **20**. The first fold line **81***b* and the second fold line **83***b* are arranged to be convergent towards the second corner of the second top panel **20**.

The second web comprises a third fold line **85***b*, third fold line **85***b* extends between the fourth severance line **67***b* and a side edge of the second top panel **20** defined by the fold line **17** at a point inset longitudinally from the second corner of the second top panel **20**.

The third fold line **85***b* and the second fold line **83***b* define in part a second trapezoidal portion T**2** of the second top panel **20**. The third fold line **85***b* and the second fold line **83***b* are arranged to be convergent towards the fourth severance line **67***b*.

The second web comprises a fourth fold line **87***b*, fourth fold line **87***b* extends between the third fold line **85***b* and a side edge of the second top panel **20** defined by the fold line **17** at a point inset longitudinally from the terminus of the third fold line **85***b* on the fold line **17**. The third fold line **85***b* and the fourth fold line **87***b* define in part a triangular portion T**3** of the second top panel **20**.

The eighth aperture A**8** is substantially "boot" shaped, the "toe" of the "boot" extending into the fifth corner panel **36***b*, and the "shaft" of the "boot" extending substantially longitudinally. The "heel" of the "boot" lies substantially on the fold line **17** defining the side edge of the second top panel **20**.

Stress upon the end regions of the handle structure is more evenly directed toward the ends of the handle structure and the carton **90** through the webs.

In the erected carton **90**, the strap member of the first top panel **12** and the strap member of the second top panel **20** overlap, at least partially, and the tapered regions overlap at least partially, to produce a substantially reinforced handle.

The strap member S of the carrying handle H provides a structure that directs stress towards the ends of the carton **90**. The features of the handle structure which are described above cause the strap S and other elements upon the composite top panel **12/20** of the carton **90** to flex, or bow, in an outwardly-projecting predetermined manner when the carton **90** is lifted F by a user U, as shown in FIGS. **5** and **6**. The structure of the webs causes the composite top panel **12/20** of the carton **90** to concavely bow in a stepped configuration, ascending inwardly, when the carton is lifted by a force, as illustrated in FIG. **6**. The connecting tabs **62***a*, **62***b*, **64***a*, **64***b* interconnect the strap S and adjacent regions of the composite top panel **12/20**. This interconnection causes the composite top panel **12/20** to maintain a more contiguous configuration when the carton **90** is lifted. The side regions of the composite top panel **12/20** have a tendency to flex away from the strap S. The connecting tabs **62***a*, **62***b*, **64***a*, **64***b* inhibit such movement and promote a more pleasing appearance and greater integrity of the composite top panel **12/20**.

The corner panels **32***a*, **32***b*, **34***a*, **34***b*, **36***a*, **36***b* enable the corners of the carton **90** to be drawn tighter when cans C or similar articles are transversely aligned in the carton **90** with respect to the lengthwise dimension of the carton **90** and composite top panel **12/20**, as shown in FIGS. **5** and **6**.

The first aperture A**1**, second aperture A**2**, seventh aperture A**7** and eighth aperture A**8** facilitate the inward movement of the corner panels **32***a*, **32***b*, **36***a*, **36***b*. In use the first aperture A**1**, second aperture A**2**, seventh aperture A**7** and eighth aperture A**8** each close up as can be seen by comparison of FIG. **6** to FIG. **4**. In this way the ends of the handle structure are braced upon the endmost articles in the uppermost row of the carton **90**.

The structure of the invention provides a handle that is reinforced and that directs stress away from the handle itself to the ends of the carton while helping the carton to maintain an aesthetically pleasing appearance and greater integrity when lifted.

The "toe" portion of each of the first, second, seventh and eighth apertures A**1**, A**2**, A**7**, A**8** forms a cutaway between the end portions of the first, second, fourth and fifth corner panels **32***a*, **32***b*, **36***a*, **36***b* and the handle panel formed by the composite top panel **12/20**. In alternative embodiments the cutaway may be formed from a slit or slot.

Turning to the construction of the carton **90** as illustrated in FIGS. **2** to **6**, it is envisaged that the carton **90** can be formed by a series of sequential folding operations in a straight line machine so that the carton **90** is not required to be rotated or inverted to complete its construction. The folding process is not limited to that described below and may be altered according to particular manufacturing requirements.

The blank **10** is folded about fold line **13**, such that the first top panel **12** and first side panel **14** are folded thereabouts. The first top panel **12** is brought into face contacting relationship with the second side panel **18**; the first side panel **14** is brought into face contacting relationship with the base panel **16** and a portion of the second side panel **18**.

Glue or other adhesive treatment is applied to the first top panel **12** or, in alternative embodiments, to a corresponding portion of the second top panel **20**.

The second top panel **20** is folded about the fold line **17** such that the second top panel **20** overlies a portion of the first top panel **12**.

The second top panel **20** is secured to the first top panel **12** to form a flat collapsed carton. The carton may be shipped or distributed in this flat collapsed form.

In alternative embodiments the second top panel **20** may be secured to the first top panel **12** by alternative securing means for example, but not limited to, staples or other mechanical fixing means.

The flat collapsed carton may be erected into a tubular structure by separating the composite top panel **12/20** from the base panel **16**.

The carton **90**, in its open ended tubular form, may be loaded with articles C through one or both open ends. It will be appreciated that in other embodiments one of the open ends of the carton **90** may be closed before loading the carton **90** with articles C through the remaining open end.

Once the carton **90** is loaded with articles C the ends of the tubular structure are closed.

A first end of the tubular structure is closed by folding the first and fifth end closure panels **22***a*, **30***a* about fold lines **21***b*, **29***b* respectively and by folding the third end closure panel **26***a* about fold line **25***b*.

Glue or other adhesive treatment is applied to an outer surface of the second end closure panel **24***a*, or in alternative embodiments to an inner surface of the fourth end closure panel **28***a*.

Folding the first and fifth end closure panels **22***a*, **30***a* about fold lines **21***b*, **29***b* and the third end closure panel **26***a* about fold line **25***b* has the effect of automatically at least partially folding the second end closure panel **24***a* and the fourth end closure panel **28***a* about fold lines **23***a*, **27***a* respectively.

The second end closure panel **24***a* is then folded about the fold line **23***a* to be brought into contact with the first and fifth end closure panels **22***a*, **30***a* and the third end closure panel **26***a* and is preferably secured thereto.

The fourth end closure panel **28***a* is then folded about the fold line **27***a* to be brought into contact with at least the second end closure panel **24***a* and is secured thereto.

A second end of the tubular structure is closed by folding the sixth, seventh, eighth, ninth and tenth end closure panels **22***b*, **24***b*, **26***b*, **28***b*, **30***b* in a manner substantially similar to that described above in relation to the first end of the carton **90**.

The primary elements of the handle structure of the subject invention are the strap member S, disjoined from the handle panel **12/20**, and what are referred to in this portion of the description as severance line segments **65***a*, **65***b*, **67***a*, **67***b*. Each severance line segment extends between one point that is close to a corner of the handle panel and a second point that is close to a centrally disposed grip region of the strap member. This arrangement produces a spring like relationship between the strap member S and the handle panel **12/20** such that when a force F is exerted upon the grip region of the carrying handle in a direction substantially perpendicular to a plane (or notional plane) in which the handle panel **12/20** lies, the strap member S flexes outwardly of the plane to a biased position above the plane, as illustrated in FIGS. **5** and **6**. The arrangement of elements just described essentially creates a structure which conjoins end regions of the strap member S with the remainder of the handle panel **12/20**. Stress due to the weight of the carton **90** and its contents (and the offsetting force F used to lift and suspend the carton **90**) is focused from the ends of the strap member towards the corners and end walls and adjacent side wall regions of the carton **90** instead of at undesirable regions of the handle panel and the grip region of the strap member that may tear or fail. The substantial separation of the grip region of the strap member from the plane of the handle panel helps facilitate dissipation of stress in the manner described above. The "toe" portion of each of the first, second, seventh and eighth apertures A**1**, A**2**, A**7**, A**8** forms a cutaway between the end portions of the first, second, fourth and fifth corner panels **32***a*, **32***b*, **36***a*, **36***b* and the handle panel formed by composite top panel **12/20**. The first aperture A**1**, second aperture A**2**, seventh aperture A**7** and eighth aperture A**8** facilitate the inward movement of the corner panels **32***a*, **32***b*, **36***a*, **36***b*. In use the first aperture A**1**, second aperture A**2**, seventh aperture A**7** and eighth aperture A**8** each close up, as can be seen by comparison of FIG. **6** to FIG. **4**. In this way the ends of the handle structure are braced upon the endmost articles in the uppermost row of the carton **90**. Providing the carton **90** with the corner panels **32***a*, **32***b*, **36***a*, **36***b* allows the carton to be disposed in closer proximity to the endmost articles disposed adjacent thereto. In this way less displacement of the carton **90** is required to brace the carton **90** against the adjacent articles. This further facilitates tightening of the carton **90** about the articles C. The uppermost row of articles tightens against one another to form a brace or strut within the carton **90** between the ends of the carton **90**.

It can be appreciated that various changes may be made within the scope of the present invention. For example, the size and shape of the panels and apertures may be adjusted to accommodate articles of differing size or shape. For example the fold lines **21***a*, **21***b*, **21***c*, **21***d*, **25***a*, **25***b*, **25***c*, **25***d*, **29***a*, **29***b*, **29***c*, **29***d* may be linear rather than the arcuate shape shown in the Figures. In some embodiments the fold lines **21***a*, **21***b*, **21***c*, **21***d*, **25***a*, **25***b*, **25***c*, **25***d*, **29***a*, **29***b*, **29***c*, **29***d* may be non-linear, formed from two or more linear sections.

It will be recognised that as used herein, directional references such as "top", "bottom", "front", "back", "rear", "end", "side", "inner", "outer", "upper" and "lower" do not necessarily limit the respective panels to such orientation, but may merely serve to distinguish these panels from one another.

As used herein, the term "hinged" refers to all manner of connections provided by one or more fold lines that define hinge features of the blank or substrate of sheet material. Such one or more fold lines facilitate folding portions of the blank or substrate of sheet material with respect to one another, or otherwise indicate optimal panel folding locations for the blank or substrate of sheet material. Any reference to "hinged" should not be construed as necessarily

referring to a connection provided by a single fold line only; indeed "hinged" may refer to a connection formed from two or more fold lines.

The term "fold line" as used herein refers to any line that defines a hinge line in a foldable sheet material, such as paperboard, for facilitating folding of portions of a blank of sheet material with respect to one another, or otherwise indicating optimal panel folding locations on the blank. A fold line may be formed by a single score, a single half cut, a line of perforations, a line of cuts, a line of short slits, a line of half cuts, a line of scores, any combination thereof, or the like.

The terms "severance line" and "severance line segment" as used herein each refers to any line that defines a separation line in a foldable sheet material, such as paperboard, for facilitating separation of portions of a blank of sheet material from one another, or otherwise indicating optimal separation locations on the blank. A severance line and severance line segment each may be formed by a single cut, a single half cut, a line of perforations, a line of cuts, a line of short slits, a line of half cuts, any combination thereof, or the like.

It should be understood that the elements of a fold line or severance line, such as cuts, scores, half cuts, slits, perforations or the like, may be dimensioned and arranged to provide the desired functionality. For example, a line of perforations can be dimensioned or designed with degrees of weakness to define a fold line and/or a severance line. The line of perforations can be designed to facilitate folding and resist breaking, to facilitate folding and facilitate breaking with more effort, or to facilitate breaking with little effort.

The invention claimed is:

1. A carton comprising:

a plurality of main panels hinged one to the next to form a tubular structure, the plurality of main panels including a handle panel having first and second opposing end edges and opposing side edges which intersect each other to form corners of the handle panel;

a plurality of end closure panels for at least partially closing an end of the tubular structure, the plurality of end closure panels including a first end closure panel;

a first corner panel hinged to the handle panel at the first end edge along a first end edge fold line, the first corner panel hinged to the first end closure panel along a corner panel fold line such that the first corner panel is defined between the handle panel and the first end closure panel;

wherein the handle panel comprises a handle structure for carrying the carton, the handle structure comprising:

a strap member integrally conjoined with the handle panel and extending substantially between the end edges, the strap member having opposing strap edges substantially disjoined from the handle panel, the strap member including a substantially centrally disposed grip region; and

a respective severance line segment disposed proximate each of the corners of the handle panel and extending from a first end point proximate a respective one of the corners to a second end point proximate the grip region of the strap member;

the carton further comprising:

a first cutaway separating the first corner panel from a first one of the corners of the handle panel; and

a second cutaway separating the first corner panel from a second one of the corners of the handle panel;

such that when a force substantially normal to a plane of the handle panel is exerted upon the grip region, the first and second cutaways facilitate displacement of the first corner panel towards the first end edge of the handle panel whereby the strap member is encouraged to flex substantially outwardly of the plane to a biased position above the plane.

2. The carton of claim **1**, further comprising a second corner panel hinged to the handle panel at the second end edge, a third cutaway separating the second corner panel from a third one of the corners of the handle panel, and a fourth cutaway separating the second corner panel from a fourth one of the corners of the handle panel, such that when a force substantially normal to the plane of the handle panel is exerted upon the grip region, the third and fourth cutaways facilitate displacement of the second corner panel towards the second end edge of the handle panel whereby the strap member is encouraged to flex substantially outwardly of the plane to said biased position.

3. The carton of claim **2**, wherein the handle structure further comprises a pair of first and second fold lines extending from each of the severance line segments and converging towards an adjacent one of the corners of the handle panel.

4. The carton of claim **3**, further comprising a first trapezoidal portion disposed adjacent to each of the corners of the handle panel, each of the first trapezoidal portions being defined in part by a respective one of the pairs of first and second fold lines.

5. The carton of claim **4**, wherein each of the first trapezoidal portions is defined in part by a respective one of the first, second, third and fourth cutaways.

6. The carton of claim **5**, wherein an end edge of each of the first trapezoidal portions is defined by the respective one of the first, second, third and fourth cutaways.

7. The carton of claim **4**, further comprising a second trapezoidal portion disposed between each of the severance line segments and an adjacent one of the side edges of the handle panel, each of the second trapezoidal portions being disposed adjacent to a respective one of the first trapezoidal portions and being defined in part by a third fold line and the second fold line of the respective one of the first trapezoidal portions, the third and second fold lines of each of the second portions extend divergently towards an adjacent one of the side edges of the handle panel.

8. The carton of claim **7**, further comprising a triangular portion disposed adjacent to each of the second trapezoidal portions, each of the triangular portions is defined in part by a fourth fold line and the third fold line of a respective one of the second trapezoidal portions, the third and fourth fold lines of each of the triangular portions extend divergently towards an adjacent one of the side edges of the handle panel, and wherein the fourth fold line of each of the triangular portions terminates on the third fold line of the each triangular portion.

9. The carton of claim **1**, wherein the grip region is defined at least in part by respective segments of the opposing strap edges of the strap member, the respective segments being substantially parallel to the opposing side edges of the handle panel.

10. A blank for forming a carton comprising a plurality of panels for forming walls of the carton, the blank comprising:

a plurality of main panels hinged one to the next to form a tubular structure in a set-up carton, the plurality of main panels including a handle panel forming one of the walls of the carton, the handle panel having first and second opposing end edges and opposing side edges that intersect to form corners of the handle panel;

a plurality of end closure panels for at least partially closing an end of the tubular structure, the plurality of end closure panels including a first end closure panel;

a first corner panel hinged to the handle panel at the first end edge along a first end edge fold line, the first corner panel hinged to the first end closure panel along a corner panel fold line such that the first corner panel is defined between the handle panel and the first end closure panel;

wherein the handle panel comprises a handle structure for carrying the carton in a set up condition, the handle structure comprising:

a strap member integrally conjoined with the handle panel and extending substantially between the end edges, the strap member having opposing strap edges substantially disjoined from the handle panel, the strap member including a substantially centrally disposed grip region; and

a respective severance line segment disposed proximate each of the corners of the handle panel and extending from a first end point proximate a respective one of the corners to a second end point proximate the grip region of the strap member;

the blank further comprising:

a first cutaway separating the first corner panel from a first one of the corners of the handle panel; and

a second cutaway separating the first corner panel from a second one of the corners of the handle panel;

such that in a set up carton when a force is exerted upon the grip region substantially normally to a plane of the handle panels, the first and second cutaways facilitate displacement of the first corner panel towards the first end edge of the handle panel to encourage the strap member to flex substantially outwardly of the plane to a biased position above the plane.

11. The blank of claim **10**, further comprising a second corner panel hinged to the handle panel at the second end edge, a third cutaway separating the second corner panel from a third one of the corners of the handle panel, and a fourth cutaway separating the second corner panel from a fourth one of the corners of the handle panel, such that in a set up condition when a force substantially normal to the plane of the handle panel is exerted upon the grip region, the third and fourth cutaways facilitate displacement of the second corner panel towards the second end edge of the handle panel whereby the strap member is encouraged to flex substantially outwardly of the plane.

12. The blank of claim **11**, wherein each of the first, second, third and fourth cutaways is formed by an aperture.

13. The blank of claim **12**, wherein each of the apertures is defined in part by the handle panel, a respective one of the corner panels, a side panel hinged to the handle panel, a minor end closure panel hinged to the corner panel and a web panel coupling the minor end closure panel to a major end closure panel hinged to the side panel.

14. A handle structure for a carton having a handle panel with opposing side edges and opposing end edges that intersect to form corners of the handle panel, the handle structure comprising:

a strap member integrally conjoined with the handle panel and extending substantially between the end edges, the strap member having opposing strap edges substantially disjoined from the handle panel, the strap member including a substantially centrally disposed grip region; and

a respective severance line segment disposed proximate each of the corners of the handle panel and extending from a first end point proximate a respective one of the corners of the handle panel to a second end point proximate the grip region of the strap member;

such that when a force substantially normal to a plane of the handle panel is exerted upon the grip region, the strap member is flexed substantially outwardly of the plane to a biased position above the plane;

the handle structure further comprising a pair of first and second fold lines extending from each of the severance line segments and converging towards an adjacent one of the corners of the handle panel;

the handle structure further comprising a first trapezoidal portion disposed adjacent to each of the corners of the handle panel, each of the first trapezoidal portions being defined in part by a respective one of the pairs of first and second fold lines; and

a second trapezoidal portion disposed between each of the severance line segments and an adjacent one of the side edges of the handle panel, each of the second trapezoidal portions being disposed adjacent to a respective one of the first trapezoidal portions and being defined in part by a third fold line and the second fold line of the respective one of the first trapezoidal portions, the third and second fold lines of each of the second portions extend divergently towards an adjacent one of the side edges of the handle panel.

15. The handle structure of claim **14**, wherein the grip region is defined at least in part by respective segments of the opposing strap edges of the strap member, the respective segments being substantially parallel to the opposing side edges of the handle panel.

16. The handle structure of claim **14**, wherein the first fold line of each pair extends from an outer end of a respective one of the severance line segments to a point on an adjacent one of the end edges of the handle panel laterally inset from an adjacent one of the side edges of the handle panel.

17. The handle structure of claim **14**, wherein the second fold line of each pair extends from an adjacent one of the corners of the handle panel to a location on an adjacent one of the severance line segments inset from an outer end of the adjacent one of the severance line segments.

18. The handle structure of claim **14**, further comprising a triangular portion disposed adjacent to each of the second trapezoidal portions, each of the triangular portions is defined in part by a fourth fold line and the third fold line of a respective one of the second trapezoidal portions, the third and fourth fold lines of each of the triangular portions extend divergently towards an adjacent one of the side edges of the handle panel, and wherein the fourth fold line of each of the triangular portions terminates on the third fold line of the each triangular portion.

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